



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/026,614	12/27/2001	Masashi Naito	KOKUSAI 086	9114
21254	7590	06/14/2005	EXAMINER	
MCGINN & GIBB, PLLC 8321 OLD COURTHOUSE ROAD SUITE 200 VIENNA, VA 22182-3817			WONG, LINDA	
			ART UNIT	PAPER NUMBER
			2634	

DATE MAILED: 06/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/026,614

Applicant(s)

NAITO ET AL.

Examiner

Linda Wong

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-14 is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. **Figures 9A-9C and 10** should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claim 1** is rejected under 35 U.S.C. 103(a) as being unpatentable over Aizawa et al (US Publication No.: 20020181574) in view of Tomisato et al. (US Patent No.: 6862316).
 - a. **Claim 1**, Aizawa et al discloses an equalizer detecting a detection signal (Fig. 1, label 102 and page 2, paragraph [0023], lines 5-6), equalizing means for

multiplying the predetermined intervals of the detection signal by weights (Fig. 1, label 104, and page 2, paragraph [0025], lines 9-15), symbol pattern generation means generating a symbol pattern reference signal (Fig. 2, label 201 and page 2, paragraph [0029], lines 7-13), an error calculating means or a subtraction section for calculating the error (Fig. 1, label 107 and page 2, paragraph [0026], lines 3-5). Although Aizawa et al does not explicitly state a symbol pattern synchronizing means, the training section detects the training signal within the data received. Since the training signal already contains the symbol pattern and symbol timing, replication of the symbol patterns is already produced in the training signal. (page 2, paragraph [0023]) Although Aizawa et al does not disclose a weighting updating means, Tomisato et al discloses an equalizer (Fig. 1, label 23), which updates the tap coefficients or weights. (Fig. 1, labels 25 and Fig. 6, labels s1, s2, s4, s5, s6, s7 and s10) It would be obvious to one skilled in the art to incorporate Tomisato et al's invention with Aizawa et al.'s receiver to decrease computational complexity. (page 1, paragraphs [0006] and [0007])

3. **Claim 2** is rejected under 35 U.S.C. 103(a) as being unpatentable over Aizawa et al (US Publication No.: 20020181574) in view of Tomisato et al. (US Patent No.: 6862316) and further in view of Schuchman et al (US Patent No.: 5283780)
 - a. **Claim 2**, Although Tomisato et al and Aizawa et al does not teach weight updating using an error power, Schuchman et al discloses updating tap

coefficients or weights using least mean square algorithm or error power minimizing algorithm. (Col. 10, lines 1-17) It would be obvious to one skilled in the art to incorporate Schuchman et al's updating weight method to Tomisato et al and Aizawa et al's inventions to decrease the error signal. (Abstract, lines 8-16)

4. **Claims 3 and 5** are rejected under 35 U.S.C. 103(a) as being unpatentable over Aizawa et al (US Publication No.: 20020181574) in view of Tomisato et al. (US Patent No.: 6862316) and further in view of Kubo et al (US Publication No.: 20010006533).
 - a. **Claim 3** inherits all the limitations of claim 1 but claim 1 does not recite a plurality of antennas, plurality of detection means, plurality of equalizers, selecting means and a data decision means. Tomisato et al discloses an adaptive array comprising a plurality of antennas and plurality of demodulators. (Fig. 1, label 10, and Col. 4, lines 46-48 and lines 63-67) Tomisato et al does not specify any mode of demodulation, thus it is possible to use a quadrature type of demodulating scheme to demodulate the inputted data from the antennas. Although Tomisato et al does not disclose a plurality of equalizers, selecting means and a data decision unit, Kubo et al discloses a plurality of equalizers, selecting/data decision means for selecting the optimum decision value. (Fig. 1, labels 5A-5C, and 6, and page 2, paragraph [0019]) It would be obvious to one skilled in the art to combine components found in Tomisato et al,

Kubo et al's and Aizawa et al's invention to provide equalization means without increasing computational complexity. (page 1, paragraphs [0006] and [0007])

b. **Claim 5** inherits all the limitations of claim 3.

5. **Claims 4 and 6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Aizawa et al (US Publication No.: 20020181574) in view of Tomisato et al. (US Patent No.: 6862316), further in view of Kubo et al (US Publication No.: 20010006533) and further in view of Schuchman et al (US Patent No.: 5283780).

a. **Claim 4** inherits all the limitations of claim 2.

b. **Claim 6** inherits all the limitations of claim 2.

6. **Claim 7** is rejected under 35 U.S.C. 103(a) as being unpatentable over Aizawa et al (US Publication No.: 20020181574) in view of Horng et al (US Patent No.: 6839379).

a. **Claim 7**, Aizawa et al discloses a step of equalizing the training signal or detection signal (Fig. 1, label 104 and page 2, paragraph [0025], lines 7-11), a step of detecting the training sequence, which inherently contains the timing or synchronization position of the symbol pattern. (Fig. 1, label 102, and page 2, paragraph [0023]) Although Aizawa et al does not teach updating weights based on the synchronization position of the symbol timing position of the training signal or detection signal, Horng et al discloses updating the weights based on the symbol timing or symbol synchronization position. (Col. 3, lines

27-30 and lines 35-42) It is inherent that equalization will occur with and without weight updating since equalization of the signal at points in which the weights do not affect the sample occur even when the sample is affected by the weight. It would be obvious to one skilled in the art to replace the method of weight calculation and updating scheme found in Aizawa et al's invention with the weight updating scheme found in Horng et al's invention to provide greater capacity, and lower bit rate error.

7. **Claim 8** is rejected under 35 U.S.C. 103(a) as being unpatentable over Aizawa et al (US Publication No.: 20020181574) in view of Horng et al (US Patent No.: 6839379) and further in view of Schuchman et al (US Patent No.: 5283780)
 - a. **Claim 8** inherits all the limitations of claim 2.
8. **Claim 9** is rejected under 35 U.S.C. 103(a) as being unpatentable over Aizawa et al (US Publication No.: 20020181574) in view of Tomisato et al. (US Patent No.: 6862316), further in view of Kubo et al (US Publication No.: 20010006533) and further in view of Horng et al (US Patent No.: 6839379).
 - a. **Claim 9** inherits all the limitations of claims 3 and 7.
9. **Claim 10** is rejected under 35 U.S.C. 103(a) as being unpatentable over Aizawa et al (US Publication No.: 20020181574) in view of Tomisato et al. (US Patent No.: 6862316), further in view of Kubo et al (US Publication No.: 20010006533), further

Art Unit: 2634

in view of Horng et al (US Patent No.: 6839379) and further in view of Schuchman et al (US Patent No.: 5283780).

a. **Claim 10** inherits all the limitations of claim 2.

Allowable Subject Matter


10. **Claims 11-14** are allowed over prior art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Linda Wong whose telephone number is 571-272-6044. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (571) 272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LW


STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800